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EXAMINER

SWERDLOW, DANIEL

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 10/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/815,050	<b>Applicant(s)</b> CSERMAK ET AL.	
	<b>Examiner</b> Daniel Swerdlow	<b>Art Unit</b> 2615	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 25-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25 and 26 is/are allowed.
- 6) ☒ Claim(s) 1-7 and 27-36 is/are rejected.
- 7) ☐ Claim(s) 34 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Based on the arrangement of the amended claims, it appears possible that applicant intended Claim 36 to depend from Claim 35 rather than from Claim 30, as presented. In the interest of compact prosecution, both alternatives are treated below on the merits.

3. **Claims 30, 32, 34 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Heck et al. (US Patent 5,584,869).**

4. Regarding Claim 30, Heck discloses a hearing aid (Fig. 4, reference 10) including a microphone 12 that corresponds to the outer microphone claimed, and a speaker 80 directed into the ear canal (column 9, lines 35-41), the hearing aid configured to: receive pressure waves (i.e., sounds) through the microphone 12 that corresponds to the outer microphone claimed and output the sounds through the speaker 80 (column 9, lines 21-35); and monitor a level of distortion (i.e., a performance parameter of the hearing aid) (column 9, line 60-column 10, line 8), determine that the output of the speaker is unreliable (i.e., a malfunction) and generate an alarm signal (i.e., an indication of the malfunction).

5. Regarding Claim 32, Heck further discloses an internal microphone 90 that corresponds to the inner microphone claimed directed into the ear canal (column 9, lines 35-41) and

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configured to detect the sound output by the speaker, and determination of signal to noise ratio by comparing the internal microphone signal with the speaker output that inherently includes determining energy level output by the internal microphone 90 that corresponds to the inner microphone claimed.

6. Regarding Claim 34, Heck further discloses the hearing aid configured to transmit a radio frequency signal to indicate the malfunction (Fig. 4, reference 22, 47; column 7, lines 4-9). As such, the hearing aid itself is configured as claimed. While Heck does not disclose the radio frequency signal being received by another hearing aid, there is no structural difference between the hearing aid disclosed in Heck and the claimed invention since the exact form of the receiving device is not limiting of the structure of the transmitting device.

7. Regarding Claim 36, Heck further discloses alarm devices (Fig. 4, reference 22, 47; column 7, lines 4-10) that communicate the malfunction indication to the user.

8. **Claims 35 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Fletcher et al. (US Patent 4,049,930).**

9. Regarding Claim 35, Fletcher discloses a hearing aid (Figs. 1, 2) including a battery 16 (column 5, lines 11-13), a microphone 10 (column 4, lines 19-21) that corresponds to the outer microphone claimed and an ear piece 14 (column 4, lines 24-27) that corresponds to the receiver claimed, the hearing aid configured to: produce an electrical output signal which is an amplified version of the signal from the microphone 10 and feed the output signal to a speaker, or ear piece, 14 which converts the signal to an audio signal to be heard by the user (i.e., receive sounds through the outer microphone and output the sounds through the speaker; and activate a warning

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system 30 (i.e., generate an indication of a malfunction) (column 5, line 21) in response to the voltage output of the battery being less than a predetermined reference voltage (column 5, lines 17-21). Due to the internal resistance inherent in any battery, the output voltage decreases as the output current increases. As such, an increase in current drain to a certain value inherently causes a voltage drop to a certain value. Therefore, Fletcher inherently discloses generating an indication of a malfunction in response to a variation in current drain of the battery exceeding a threshold value, as claimed.

10. Regarding Claim 36, Fletcher further discloses the hearing aid warning system is configured to communicate the malfunction indication to the user (column 7, lines 35-38).

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. **Claims 1 through 7, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heck et al. (US Patent 5,584,869) in view of Nielsen et al. (US Patent 6,879,692).**

13. Regarding Claim 1, Heck discloses a hearing aid (Fig. 4, reference 10) that includes a microphone 12, a speaker 80 and an internal microphone 90 (i.e., a plurality of transducers) with a system for detecting failure (i.e., a self-diagnostics system) (column 3, lines 13-18) comprising:

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a signal processor 14 that corresponds to the detection circuitry claimed and detects and reports distortion (i.e., monitors the functional status of at least one transducer) (column 9, lines 60-64) by determining a signal-to-noise ratio (column 10, lines 3-8) that inherently measures a signal energy output of the transducer and comparing the signal-to-noise ratio to a prescribed threshold. Heck also discloses detection of the output of the internal microphone to determine if the speaker is reproducing an incoming signal from the external microphone (column 9, lines 45-52), which also involves comparing the internal microphone output to the external microphone output (i.e., a predetermined threshold). In either case, the signal processor generates an alarm signal that corresponds to the error message output claimed and triggers an alarm device that corresponds to the memory device claimed and stores and communicates the error message (column 5, lines 44-49). Because the alarm device requires only a triggering signal to indicate the error, it inherently includes a memory device. Further, as stated above, the detection is performed by monitoring an internal (i.e., inner) microphone. Therefore, Heck anticipates all elements except that Heck utilizes the signal from the external microphone instead of the test tone generator claimed. Nielsen discloses a self-testing hearing aid that uses a test tone generator (Fig. 1, reference 40; column 4, lines 46-50). Nielsen further discloses that such an arrangement permits determination of frequency characteristics of the device (column 6, lines 2-5). It would have been obvious to one skilled in the art at the time of the invention to apply the test tone generator taught by Nielsen to the hearing aid taught by Heck for the purpose of realizing the aforesaid advantage.

14. Regarding Claim 2, Heck further discloses alarm devices (Fig. 4, reference 22, 47; column 7, lines 4-10) that correspond to the error indicator claimed.

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15. Regarding Claim 3, Heck further discloses the alarm device is a light (Fig. 4, reference 41, 49; column 7, lines 6-9).

16. Regarding Claim 4, Heck further discloses the alarm device is a buzzer (i.e., tone generator) (Fig. 4, reference 43, 51; column 7, lines 6-9).

17. Regarding Claim 5, Heck further discloses an external (i.e., outer) microphone (Fig. 4, reference 12).

18. Regarding Claim 6, Heck further discloses an internal (i.e., inner) microphone (Fig. 4, reference 90).

19. Regarding Claim 7, Nielsen further discloses display of the error message on a programming device connected to the hearing aid (column 5, lines 43-44). As such, the connection constitutes a programming port. One skilled in the art would have known that such an arrangement permits convenient setting and updating of hearing aid parameters and that the use of the same interface for error message output would facilitate miniaturization and reduce manufacturing costs. As such, it would have been obvious to one skilled in the art at the time of the invention to apply the interface usage taught by Nielsen to the combination made obvious by Heck and Nielsen for the purpose of realizing the aforesaid advantage.

20. Regarding Claim 31, as shown above apropos of Claim 30, Heck anticipates all elements except determining a malfunction from an energy level output by the outer microphone. Nielsen discloses determination of hearing aid malfunction based on lack of microphone output (column 5, lines 52-56). Nielsen further discloses that such an arrangement detects microphone occlusion due to ear wax and allows rapid diagnosis and resolution of the problem (column 5, lines 52-56).

It would have been obvious to one skilled in the art at the time of the invention to apply the

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microphone output determination taught by Nielsen to the hearing aid taught by Heck for the purpose of realizing the aforesaid advantages.

21. Regarding Claim 33, as shown above apropos of Claim 30, Heck anticipates all elements except downloading the indication through a programming port on the hearing aid. Nielsen discloses display of a hearing aid error message on a programming device connected to the hearing aid (column 2, lines 5-8). As such, the connection constitutes a programming port. Nielsen further discloses that such an arrangement provides an indication of the type of defect detected. It would have been obvious to one skilled in the art at the time of the invention to apply the indication downloading taught by Nielsen to the hearing aid taught by Heck for the purpose of realizing the aforesaid advantage.

22. **Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heck et al. (US Patent 5,584,869) in view of Nielsen et al. (US Patent 6,879,692) and further in view of Stokes et al. (US Patent 4,575,587).**

23. Regarding Claim 27, Heck discloses a hearing aid (Fig. 4, reference 10) including a microphone 12 that corresponds to the outer microphone claimed, and a speaker 80 directed into the ear canal (column 9, lines 35-41), the hearing aid configured to: receive pressure waves (i.e., sounds) through the microphone 12 that corresponds to the outer microphone claimed and output the sounds through the speaker 80 (column 9, lines 21-35). Therefore, Heck anticipates all elements except that Heck utilizes the signal from the external microphone instead of the test tone generator claimed and Heck does not differentiate a faulty loudspeaker from a faulty microphone. Nielsen discloses a self-testing hearing aid that uses a test tone generator (Fig. 1,



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reference 40; column 4, lines 46-50). Nielsen further discloses that such an arrangement permits determination of frequency characteristics of the device (column 6, lines 2-5). It would have been obvious to one skilled in the art at the time of the invention to apply the test tone generator taught by Nielsen to the hearing aid taught by Heck for the purpose of realizing the aforesaid advantage. Stokes discloses a method of transducer fault isolation (Figs. 4A, 4B; column 5, lines 28-45) that determines a receiver 16 has failed if a microphone 18 detects a first acoustic signal that corresponds to the test tone claimed from the receiver and does not receive a second acoustic signal that corresponds to the other noise claimed, and determines the microphone has failed if the first acoustic signal that corresponds to the test tone claimed from the receiver is not detected. Stokes further discloses that such an arrangement provides transducer fault isolation down to a single element in a system with a plurality of transducers (column 1, lines 43-44). It would have been obvious to one skilled in the art at the time of the invention to apply the isolation logic taught by Stokes to the combination made obvious by Heck and Nielsen for the purpose of realizing the aforesaid advantage.

24. Regarding Claim 28, Nielsen further discloses display of a hearing aid error message on a programming device connected to the hearing aid (column 2, lines 5-8). As such, the connection constitutes a programming port. Nielsen further discloses that such an arrangement provides an indication of the type of defect detected. It would have been obvious to one skilled in the art at the time of the invention to apply the indication downloading taught by Nielsen to the combination for the purpose of realizing the aforesaid advantage.

25. Regarding Claim 29, Heck further discloses the hearing aid configured to transmit a radio frequency signal to indicate the malfunction (Fig. 4, reference 22, 47; column 7, lines 4-9). As

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such, the hearing aid itself is configured as claimed. While Heck does not disclose the radio frequency signal being received by another hearing aid, there is no structural difference between the hearing aid disclosed in Heck and the claimed invention since the exact form of the receiving device is not limiting of the structure of the transmitting device.

### ***Allowable Subject Matter***

26. Claims 25 and 26 are allowable.

27. Regarding Claim 25, as shown above apropos of Claim 27, the combination of Heck, Nielsen and Stokes makes obvious all elements except sending the test tone in response to the inner microphone output energy level falling below a threshold. Because the prior art does not disclose or suggest every element of the claimed invention, Claim 25 is allowable.

28. Claim 26 is allowable due to dependence from Claim 25.

### ***Response to Arguments***

29. Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 571-272-7531. The examiner can normally be reached on Monday through Friday between 7:30 AM and 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H. Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Daniel Swerdlow  
Primary Examiner  
Art Unit 2615

ds

27 September 2006